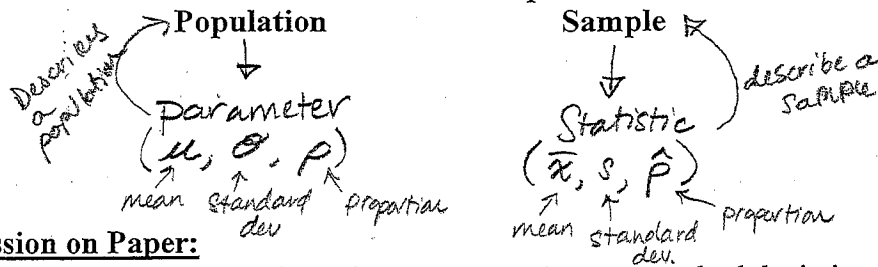


6.4 and 6.5: Intro to a Sampling Distribution – What exactly is that?

First, let's remember our statistical relationships and notation:



A discussion on Paper:

So far, we have always been given the parameters (mean, standard deviation, and proportions) for any population that we work with.

Great. But, in the real world, is that always possible? No! Why?

It is almost impossible to gather all information from a huge population.

So how do we find out information about a population that we are interested in?

We use a Sample! ← Last semester → what makes a good sample?

Consider our population for today as an example. If I consider the population of all of the pennies in the United States, is it possible to find the average date of the pennies that are in circulation?

No way

Because it is not possible we take a sample to help us determine what the average date may be. Will the average date of our individual sample match the true average date of the population?

Sometimes Yes, Sometimes No

Will the average date of my sample of pennies be the same as Nick's mean of the sample of pennies that he has?

Probably not, but possible.

If my sample of penny dates has a different mean than Nick's sample and other sample means, then how can we use our sample data to estimate the true mean of the population of pennies?

We compare it to other samples using our knowledge of a Sampling Distribution.

What is a Sampling Distribution?

A Distribution made up of data from samples of the population.
mean or proportion

The Goal: *We are trying to TARGET the population mean using our sample means.*

Sampling Distributions are THEORETICAL. In reality we cannot find all possible samples from a population. (If we could, then we would actually know the population parameters and there is no point to learning about sampling distributions.) Think about our pennies. Is it possible for us to find all possible samples of pennies in the U.S.? **Absolutely not.**

So why can we use our knowledge of sampling distributions, if it is impossible for us to create the whole distribution?

- 1.) There are populations that we do know and can take all possible samples of. *Ac scores, small populations.*
- 2.) We use those populations to examine the characteristics of their Sampling Distributions and apply that knowledge to...